

AMENDED CLAIMS

[received by the International Bureau on 30 March 2005 (30.03.2005);
original claim 1 amended; original claim 49 deleted ; original claims 50/51 renumbered to 49/50 ; original
claim 52 split into 2 claims 51/52 ; remaining claims unchanged (2 pages)].

CLAIMS

1. A hydraulic cement based on calcium phosphate for surgical use comprising
 - A) a first component comprising powder particles of calcium phosphate; and
 - B) a second component comprising water,
characterized in that
 - C) said calcium phosphate comprises anhydrous, amorphous calcium phosphate (ACP);
 - D) said ACP is obtained by milling a calcium phosphate synthesized above 500°C;
 - E) said ACP is able to react with water thereby producing a hardened cement; and
 - F) the specific surface area (SSA) of the powder particles of said first component is in the range of 0,05 to 10,00 m²/g.
2. A hydraulic cement according to claim 1, characterized in that said ACP is obtained by milling of one or more substances chosen from the group of
 - a) α-tricalcium phosphate [(α-TCP; Ca₃(PO₄)₂] ;
 - b) β-tricalcium phosphate [(β-TCP; Ca₃(PO₄)₂] ;
 - c) oxyapatite [(OXA); Ca₁₀(PO₄)₆O];
 - d) tetracalciumphosphate [TetCP; Ca₄(PO₄)₂O]in the presence of not more than 20 weight percent of a non-aqueous auxiliary milling liquid compared to 100 weight percent of calcium phosphate.
3. Cement according to claim 2, characterized that the auxiliary milling solvent is an alcohol, preferably ethanol, or isopropanol.
4. Cement according to one of the claims 1 to 3, characterized in that additionally to said ACP it contains one or several other calcium phosphates from the following list: monocalcium phosphate (MCP; Ca(H₂PO₄)₂); monocalcium phosphate monohydrate (MCPM; Ca(H₂PO₄)₂.H₂O), dicalcium phosphate (DCP; CaHPO₄), dicalcium phosphate dihydrate (DCPD; CaHPO₄.2H₂O); Octocalcium phosphate (OCP; Ca₈H₂(PO₄)₆.5H₂O); calcium deficient hydroxyapatite (CDHA; Ca₉(HPO₄)(PO₄)₅OH), hydroxyapatite (HA; Ca₁₀(PO₄)₆(OH)₂), beta-tricalcium phosphate (β-CP; Ca₃(PO₄)₂), oxyapatite (OXA; Ca₁₀(PO₄)₆O), tetracalcium phosphate [TTCP; Ca₄(PO₄)₂O] and α-tricalcium phosphate.

lanolin [CAS registry number 8020-84-6], lecithin [CAS registry number 8002-43-5], medium chain triglycerides (no registry number), monoethanolamine (C_2H_7NO), oleic acid ($C_{17}H_{33}COOH$), polyethylene glycol monocetyl ether [CAS registry number 9004-95-9], polyethylene glycol monostearyl ether [CAS registry number 9005-00-9], polyethylene glycol monolauryl ether [CAS registry number 9002-92-0], polyethylene glycol monooleyl ether [CAS registry number 9004-98-2], polyethoxylated castor oil [CAS registry number 61791-12-6], polyoxyl 40 stearate ($C_{98}H_{196}O_{42}$), polyoxyl 50 stearate ($C_{118}H_{236}O_{52}$), triethanolamine ($C_6H_{15}NO_3$), anionic emulsifying wax [CAS registry number 8014-38-8], nonionic emulsifying wax [CAS registry number 977069-99-0], and sodium dodecyl sulfate ($NaC_{12}H_{25}SO_4$).

49. Cement according to one of the claims 1 to 48, characterized in that the specific surface area (SSA) of the first component is in the range of 1.5 to 3.5 m^2/g
50. Cement according to one of the claims 1 to 49, characterized in that the cement viscosity of the cement is larger than 1 $Pa \cdot s$ at a shear rate of 400 s^{-1} , one minute after the start of cement mixing.
51. Cement according to claim 50, characterized in that the cement viscosity of the cement is larger than 10 $Pa \cdot s$ at a shear rate of 400 s^{-1} , one minute after the start of cement mixing.
52. Cement according to claim 51, characterized in that the cement viscosity of the cement is larger than 100 $Pa \cdot s$ at a shear rate of 400 s^{-1} , one minute after the start of cement mixing.
53. Cement according to claim 52, characterized in that component "a)" additionally comprises water-soluble phosphate salts and component "b)" comprises a polymer, preferably sodium hyaluronate
54. Cement according to one of the claims 1 to 53, characterized in that the setting time of the mixture of said two components is between 2 to 15 minutes, preferably between 5 and 12 minutes.